

Metropolitan State University
ICS 382 Computer Security
Fall 2012

SYLLABUS

Class Hours:

Wednesdays, 6:00 - 9:20
St. Paul Library 321 (Lab NM L103)
August 29 – December 12, 2012

Instructor: Sue Fitzgerald, Ph.D.
Metropolitan State University
700 E. Seventh St., NM L116
St. Paul, MN 55106
E-mail: sue.fitzgerald@metrostate.edu
Web site: This course will use D2L
Phone: 651-793-1473
Support staff: 651-793-1471 (Lucy Peterson)

Office Hours:

Mondays	2:00-4:00
Wednesdays	1:00-5:00
Thursdays	2:00-6:00

- Appointments are encouraged to prevent conflicts, even during office hours.
- I will be available before class and by appointment at other times in addition to office hours.
- I am usually available in my office Monday-Thursday afternoons and via email on weekdays.
- It is only moderately likely that I will respond to email on the weekends.

Required Reading:

- Conklin and White, Principles of Computer Security: CompTIA Security+ and Beyond, 3rd Edition, McGraw-Hill, 978-07-178619-5.
- McClure, Scambray and Kurtz, Hacking Exposed: Network Security Secrets and Solutions, 7th Edition, McGraw-Hill, 978-0-07-178028-5 (optional reading)
- Other readings as assigned

Course description: This course introduces computer security aspects of computer systems. The course presents a current technical look at computer system strengths and vulnerabilities, and techniques to effectively protect these assets. Topics include security threats, security management, operating systems, network firewall and security measures.

Prerequisites:

ICS 141 Programming with Objects AND MATH 215 Discrete Mathematics OR
CFS 280 Introduction to Computer Forensics

This course is a required course for the Computer Forensics and Computer Information Technology majors. It is a Group 2 elective for Computer Science and Computer Information Systems majors.

Competence statement: Knows the key areas of information security and general vulnerabilities facing information systems well enough to be able to identify and evaluate strategies, technologies and techniques to mitigate threats and improve the security of information systems.

Learning outcomes:

- Comprehend emerging issues related to adequate security management of information and computing resources
- Explain computer and information security issues using technical vocabulary
- Recognize information and computing asset security threats and vulnerabilities
- Understands and can discuss basic concepts of security management, the technical characteristics of threats and technical solutions
- Familiar with example technologies employed to provide security controls over information and computing resources
- Can use cybersecurity products to provide asset protection

Letter Grade: Your letter grade will be determined based on the percentage of possible points that you earn during the semester. The following table relates the percentage to a letter grade:

Percentage	Grade
94 - 100	A
90 - 93	A-
87 - 89	B+
84 - 86	B
80 - 83	B-
77 - 79	C+
74 - 76	C
70 - 73	C-
60 - 69	D
Below 60 %	F

If you have selected the S/N grading option, then to receive a satisfactory rating (S) you must earn at least 70% of the possible points. If you wish to elect S/N grading, you must inform the registrar before the second class meeting. Bear in mind that you must earn a C- or better (or an S) in order for a course to fulfill a requirement or elective in your major.

Incompletes: From time to time I am asked to consider assigning a grade of incomplete. A grade of incomplete may be considered if the person requesting has successfully completed at least two thirds of the class and is a student in good standing in the class. "Good standing" means that the requester is earning a minimum of a B grade and has attended class regularly. I reserve the right to say no to any request for an incomplete without justifying my position.

Graded Assignments: Points are allocated to different learning activities as indicated in the table below.

Description of Item	Number of Assignments	Points per Assignment	Total Points
Hands on labs (drop lowest)*	11	20	200
Short written reports	4	25	100
Weekly quiz (drop lowest) or homework	8	15	120
Midterm Exam			100
Final Exam (not comprehensive)			100
Total			Approx 620

*There will be some variation in the number of assignments and the points or weight awarded for each assignment may vary. The total shown above is an approximation to the final number of possible points.

Written Reports:

- Written reports are due on the designated dates and must be submitted via D2L. The reports will be used as the basis of class discussion on the days they are due.
- Electronically submitted assignments must be in one of the following formats: pdf, txt, rtf, Word 2003, 2007, 2010, jpg or gif. No other formats will be accepted. If I cannot read it, I cannot grade it.
- Do not email attachments to me. They will be rejected.
- If you cannot attend that class, the report is still due and must be submitted via D2L.
- No work will be accepted after the last scheduled class period.
- It is a good practice to keep a backup copy of your work.

Quizzes and Homeworks:

- Weekly quizzes will be given. No makeup quizzes will be offered. However, the lowest quiz grade will be dropped which permits one absence without penalty.
- From time to time, a homework assignment may be made instead of a quiz. Homeworks are due on the designated dates and must be submitted via D2L. They will be used as the basis for class discussion on the days they are due and answers to problems will be provided during class. No late homework assignments (past 6:00 PM on the due date) will be accepted.

No Makeup Tests: No makeup tests will be offered. If you miss the midterm, the final exam will be doubly counted in order to replace the missed test. You must inform me via email of your valid reason for missing the test no later than one day following the midterm.

I strongly believe that all students should take the final exam at the designated time. This helps to ensure that all students are tested in a uniform manner. If you do convince me to write a separate final exam for you, it may be more difficult than the exam given to the rest of the class. I reserve the right to refuse to give you a makeup final exam.

No Makeup Labs: No opportunities will be offered for making up missed labs. Your lowest or one missing lab grade will be dropped which permits one absence without penalty. In some cases it may be possible for you to do the lab outside class time.

Missing Class: If for any reason you need to miss a class, please let me know beforehand whenever possible. Materials can be downloaded from D2L. Please make arrangements to borrow or copy a classmate's notes from that session. Assignment due dates and late assignment penalties will apply whether you attend class or not.

Expectations: Sometimes difficulties arise when the expectations of students and teachers are different. Here is a brief summary of what I expect from you AND a summary of what you can expect from me.

What you can expect from me:

- I will share my technical knowledge with you as effectively as I know how.
- I will grade your work and return it quickly. In most cases I will grade your work and return it to you at the next scheduled class period (but not before). Occasionally I will take two class periods to return your work.
- I will provide you with written feedback on the quality of your work. If you do not understand why you were assigned a particular grade or if my comments are not clear, I will explain more thoroughly if you ask me to.
- I will show up for class. I will start and end class on time.
- I will return your phone calls and emails. However, I may take more than one business day to do so. I do not offer 24/7 service.

- I will listen to you respectfully. I will answer your questions respectfully.
- I will provide you with a summary of the total points earned to date anytime that you ask for it.

What I expect from you:

- I expect you to read the syllabus and to know the class policies outlined there.
- I expect you to seek help if you are having difficulty with your course work. I expect you to talk to me if you are having problems. If a stressful work or home situation arises which is affecting your ability to perform well, please talk to me as soon as possible.
- If you do not understand why you received a particular grade, I expect you to approach me and ask questions. I expect you to treat me with respect even if you disagree with the grade you were assigned.
- I expect you to show up for class on time and stay for the entire session except when you have an unavoidable conflict. If you must miss class, assignments and most handouts can be obtained from D2L.
- I expect you to turn in your assignments. I expect them to be submitted in a timely fashion.
- I expect you to come to class prepared to discuss all assignments on the day they are due.
- I expect you to know the class late policy. (A penalty of 10% per day will be assessed for late work. No assignment will be accepted more than five days past its assigned due date. Late homework will not be accepted.)
- I expect you to turn in individual and original work. Please be respectful of copyrights and document your sources appropriately. This means that what you turn in must be your own work and it cannot be work previously done for some other class. If you copy the words of another, you must put quote marks around the quote and indicate the source. Otherwise, you have committed plagiarism. If you turn in work done by someone else you may be assigned an F in this course. Repeated instances of academic dishonesty can result in expulsion from the University.
- I expect you to say no if another student asks you for a copy of your work. The penalty for permitting another student to copy your work is the same as if you yourself had turned in work that was not individual and original.
- I recommend that you complete the reading assignments before you come to class, particularly if you are having difficulty understanding the material.
- I expect you to turn off your cell phone during class. If your cell phone must remain on, please turn your phone to vibrate.
- I expect you to refrain from reading email, surfing the web, playing computer games or doing your homework assignments during lecture.
- I expect you to remain in your seats during lecture except for emergencies or religious observances. Scheduled breaks will be provided.

Respect: Metro State is privileged to serve students from many different nations, racial, ethnic and religious backgrounds. Students, staff and faculty practice a variety of lifestyles and come from many walks of life. We expect our classrooms to be safe havens where the opinions, practices and beliefs of others are treated respectfully. If you feel that you are not being treated appropriately by others in the class, I ask that you bring this to my attention so that the issues can be addressed. If I offend you, I ask that you approach me to share your concern so that we can learn from each other how to live together with respect and honor.

If you do not feel comfortable sharing your concern directly with me, contact the Information and Computer Sciences Department chairman, Brahma Dathan, at 651-793-1475 or brahma.dathan@metrostate.edu.

Learning Disabilities: If you have a documented learning disability, or if you suspect you have a learning disability that may have an impact on your opportunity to succeed in this course, please notify me before the second class so we can explore ways to reasonably accommodate your learning style. If you want, you may work with Disability and Special Services by calling 651-793-

1549 or emailing disability.services@metrostate.edu. Note that I must receive adequate notice in order to honor requests.

Academic Honesty: While engaged in the study of computer security or computer forensics, it is not unusual to learn of system vulnerabilities. It is not, however, appropriate to exploit them. As computer professionals in training, you are expected to honor the University's Acceptable Use of Computers and Information Technology Resources policy (see attached). Violations of the Acceptable Use policy can lead to expulsion from the University and/or legal prosecution.

Written reports may be submitted to turnitin.com for plagiarism checking.

University Policy on Academic Progress: The university's academic progress policy may affect students who withdraw from classes. Be aware that a W (withdraw) is different from a drop. A drop occurs at the very beginning of the term (no later than September 2 this fall), while a withdraw occurs after the first week (between September 1st and November 16th this term). Withdrawing from this class may put you at risk for academic probation. If you have questions about your situation, contact your academic advisor as soon as possible.

University Policy on Attendance: Students who attend neither the first nor second night of class will be dropped from enrollment.

Schedule (REVISED OCTOBER 17, 2012)

Week	Dates	Topics	Reading	Assignments
1	Aug 29	Syllabus Overview, what is security? General security concepts	Conklin: Chapters 1 and 2	
	Sept 2	LAST DAY TO DROP WITH REFUND		
2	Sept 5	Operational & Organizational Security	Conklin: Chapters 3 & 8 Lab #1: Installing a virtual machine and server	Quiz (Conklin: Chapters 1-3 & 8)
3	Sept 12	Crypto	Conklin: Chapter 5 Lab #2: Footprinting McClure (optional): Chapters 1 & 3	Report #1 FBI Crime Report
4	Sept 19	Crypto PKI	Conklin: Chapter 5 & 6 Lab #3: SSH & Encryption McClure (optional): Chapter 8	Quiz – replaced by homework
5	Sept 26	Network fundamentals	Conklin: Chapter 9 Lab #4: Network Forensics McClure (optional): Chapter 10	Quiz
6	Oct 3	Infrastructure	Conklin: Chapter 10 Lab #5: Pen Testing (scanning) McClure (optional): Chapters 2 & 12	Report #2 Cyberattacks
7	Oct 10	Authentication	Conklin: Chapter 11 Review for midterm	Quiz
		REVISION	REVISION	REVISION
8	Oct 17	Authentication Midterm	Conklin: Chapter 11 Midterm	Midterm
9	Oct 24	Wireless	Conklin: Chapter 12 Lab #6: Pen Testing (exploits) McClure (optional): Chapter 6, Appendix B & C	Quiz -- replaced by homework

10	Oct 31	Intrusion detection Hardening of systems	Conklin: Chapter 13 (p. 322-344 & p. 351-360) & Chapter 14 (p. 364-367 & p. 384-392) Lab #7: DNS McClure (optional): Chapter 1	Quiz
11	Nov 7	Attacks	Conklin: Chapter 15 Guest speaker	Report #3 E-Voting
12	Nov 14	Email The Web	Conklin: Chapters 16 & 17 Lab #8: Host level security McClure (optional): Chapter 4	Quiz
	Nov 16	LAST DAY TO WITHDRAW		
	Nov 21	THANKSGIVING – NO CLASS		
13	Nov 28	People Legal Issues and Ethics Privacy	Conklin: Chapters 4, 24 & 25 Lab #9: SQL Injection or Firewall egress filtering McClure (optional): Chapter 10 or Chapter 4	Report #4 Privacy
14	Dec 5	Disaster recovery Risk management	Conklin: Chapters 19 & 20 McClure (optional): Chapter 4	Quiz – replaced by graded in-class exercise
15	Dec 12	Final Exam	Final Exam	Final Exam
	Dec 17	SAVE THE DATE	Snow day makeup date	

Adjustments to the schedule and assignments will be made as needed.

Summary of changes (Oct 17, 2012)

- Deleted chapter 10
- Replaced 10/24 quiz by homework
- 12/5 quiz replaced by in-class graded exercise
- Chapter 13 -- reading reduced to p. 322-344 & p. 351-360
- Chapter 14 – reading reduced to p. 364-367 & p. 384-392

Lab Schedule

Week	Lab Topic	Reading from Hacking Exposed	Notes
2	Installing a virtual machine and server	None	Must be first, otherwise order not important
3	Footprinting	McClure (optional): Chapters 1 & 3	
4	SSH & Encryption	McClure (optional): Chapter 8	Must follow directions perfectly
5	Network Forensics	McClure (optional): Chapter 10	Requires pcap file
6	Pen Testing (scanning)	McClure (optional): Chapters 2 & 12	
9	Pen Testing (exploits)	McClure (optional): Chapter 6, Appendix B & C	Builds on previous Pen Testing (scanning) lab
10	DNS	McClure (optional): Chapter 1	
12	Host level security	McClure (optional): Chapter 4	
13 or	SQL injection	McClure (optional): Chapter 10	NEW
13	Firewall egress filtering (many problems)	McClure (optional): Chapter 4	Lots of problems, many variables, disable ALL firewalls